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(12) **United States Patent**
Stamler et al.(10) **Patent No.:** **US 6,884,773 B1**
(45) **Date of Patent:** ***Apr. 26, 2005**(54) **MODIFIED HEMOGLOBINS, INCLUDING
NITROSYLHEMOGLOBINS, AND USES
THEREOF**(75) Inventors: **Jonathan S. Stamler**, Chapel Hill, NC
(US); **Andrew J. Gow**, Doylestown, PA
(US)(73) Assignee: **Duke University**, Durham, NC (US)(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 514 days.This patent is subject to a terminal dis-
claimer.(21) Appl. No.: **08/796,164**(22) Filed: **Feb. 6, 1997****Related U.S. Application Data**(63) Continuation-in-part of application No. PCT/US96/14659,
filed on Sep. 13, 1996, and a continuation-in-part of appli-
cation No. 08/667,003, filed on Jun. 20, 1996, now Pat. No.
6,197,745, and a continuation-in-part of application No.
08/616,371, filed on Mar. 15, 1996, now Pat. No. 6,855,691,
said application No. PCT/US96/14659, filed on Sep. 13,
1996, is a continuation of application No. 08/667,003, filed
on Jun. 20, 1996, now Pat. No. 6,197,745, and a continuation
of application No. 08/616,371, filed on Mar. 15, 1996, now
Pat. No. 6,855,691, said application No. 08/667,003, filed on
Jun. 20, 1996, is a continuation-in-part of application No.
08/616,371, filed on Mar. 15, 1996, now Pat. No. 6,855,691.
(60) Provisional application No. 60/003,801, filed on Sep. 15,
1995.(51) **Int. Cl.⁷** **A61K 38/42**; C07K 14/805(52) **U.S. Cl.** **514/6**; 514/2; 514/832;
530/385; 530/829(58) **Field of Search** 514/2, 6, 832;
530/385, 829(56) **References Cited****U.S. PATENT DOCUMENTS**

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Primary Examiner—Bennett Celsa(74) *Attorney, Agent, or Firm*—Hamilton, Brook, Smith &
Reynolds, P.C.(57) **ABSTRACT**Diseases which can be ameliorated by delivery of NO to
tissues affected by the disease can be treated by adminis-
tration of nitrosyl-heme-containing donors of NO, including
nitrosylhemoglobin. Nitrosylhemoglobin can be made by
the reaction of NO with hemoglobin under certain condi-
tions in which the NO:hemoglobin ratio is critical, and is
converted to SNO-Hb under physiological conditions.